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AUTHOR	Supon, Viola
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ABSTRACT

This article explains the use of the multiple intelligences theory and rubric design to assess student learning. A rubric is a series of narrative statements describing the levels of quality of a product or a performance. The article discusses how these assessment tools can be used in K-12 classrooms and notes ways to assess quality results by developing teacher-generated rubrics. When middle-school and high-school teachers weave the multiple intelligences into a rubric design, they provide opportunities that can lead to challenging and rewarding means of assessing student performance. For the development of multiple intelligences rubrics, teachers should recognize the defined concerns, the deliberate practices they need to employ, the options for instructional enhancement, and the cyclical dimensions of how instruction, curriculum, and assessment are connected. An example of a rubric on constructing a mathematical mobile in 9th-grade geometry is included to show how this assessment technique, when woven with the different intelligences, can meet varying students' abilities. (Contains 22 references.) (SM)

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Weaving the Multiple Intelligences Into Rubric Design

Viola Supon, Ed.D.
Associate Professor
Bloomsburg University
3206 McCormick Center
Bloomsburg, PA 17815
570-389-4994 (O)
FAX: 717-389-3894

ABSTRACT: This article explains the use of the multiple intelligence theory and rubric design to assess student learning. The utilitzation of "how" these assessment tools can be used in the K-12 classroom is discussed as well as ways to access quality results by developing teacher -created rubrics. An example of a rubric is included showing how this assessment technique, when woven with the different intelligences, can meet the varying students' abilities.

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Weaving the Multiple Intelligences Into Rubric Design

In recent years, the educational literature brought to the forefront the aspect of the multiple intelligences theory as espoused by Howard Gardner. This theory evolves from extensive brain research (Nicholson-Nelson 1998). According to Gardner (1998, 20) an intelligence is "a physchobiological potential to solve problems or to fashion products that are valued in at least one cultural context." In Gardner's, *Frames of Mind* (1983) and his subsequent research *(Gardner 1998),* he states that a student can possess an array of intelligences: linguistic; logical-mathematical; spatial; musical; bodily-kinesthetic; interpersonal; intrapersonal; and naturalistic dominances. Gardner proposes a nineth intelligence, existential--where questions about one's existence occur. Until further research verifies the nineth, Gardner advocates the eight intelligences. All of these intelligences can be interlaced to help students master acquisition of skills and knowledge.

One of the basic entities in teaching has been to analyze the context of student learning by providing an account of what occurs during the process of learning. This has been accomplished by examining students' works through various assessment tools. One such assessment tool is a rubric. A rubric is " a series

of narrative statements describing the levels of quality of a product or a performance" (Connecticut's Pomperaug Regional School District 15 1996, 279).

When middle and secondary teachers weave the multiple intelligences into a rubric design, they provide opportunities that can lead to challenging and rewarding means of assessing student performance. For the development of a multiple intelligence rubric, teachers should recognize: (1) the defined concerns, (2) the deliberate practices, (3) the instructional options, and (4) the cyclical dimensions.

THE DEFINED CONCERNS

A defined concern, as suggested by the author, evokes a matter of consideration. One of the defined concerns for developing this type of assessment is the reality that it will require more time than the routine types of assessment tools taken from the teacher's edition of the text. Types of assessment usually administered are tests that include multiple choice, short essay, true and false, and/or fill in the blanks. Teachers may feel inadequate with attempting the task of developing a teacher-created, multiple intelligence rubric because they are concerned about the time it will take as well as their lack of knowledge about the procedure for its development.

Middle and secondary school teachers should recognize that there is ample time

to develop their own rubrics that coincide with the curriculum. As Campbell has explained, "the plan to engage the various intelligences involves the use of.... a thematic, interdisciplinary approach" (1989, 7). Teachers are aware that they cannot decide their own curriculum. There are national, state, and district standards that assist teachers. Recognizing this helps teachers save time as they develop their thematic units of study and rubrics. An educator can "find the time" if the individual "believes the whole child is concerned" (Dutt-Doner and Maddox 1998, 187) and that students benefit.

Another concern is not what to teach but "how" to teach the content in a manner that integrates the multiple intelligences. Linda Campbell reminds teachers that "any topic can be approached in multiple ways" (1997, 1). After deciding on the theme or topic, teachers need to recognize the "concern" of determining the exact skills to be measured and mastered. Teachers need to be aware that the rubrics they design must depict what "genuine mastery of each proposed assessment task looks like" (Wiggins 1992, 26.) To accomplish mastery, the rubric design "must be purposeful from the student's point of view" (Wiggins and McTighe 1998, 117). The rubric should focus on student actions that are ***purposely directed*** toward a determined set of results that

reflect the necessary knowledge base and skills for that particular aspect of the curriculum.

Teachers can decrease the concerns by listing the intelligences and then deciding on a project-centered approach that will allow students to showcase the results of the assigned tasks. The project-centered approach provides variety and the educational dimensions for students to showcase their performance as evidence. It is through their performance that students indicate how much they understand the knowledge in its context and how well they apply the skills essential for the concepts/knowlege being taught. Teachers need to be aware that "each lesson does not reflect each intelligence" (Hoerr 1997, 44), but it is assumed that through the project approach, the multiple intelligences will be encompassed within the entire performance of the assigned tasks. It is through the teacher's design of learning, especially by having students complete the various tasks the rubric requires, that the curriculum goals are accomplished while connecting the multiplicity of each student's intelligences.

Implications for grading are another concern that junior and senior high teachers need to consider when developing this type of rubric. Most teachers at these grade

levels usually put a grade in the gradebook from each means of assessment. Then the average of these grades determines the final grade. Teachers may place the total points, along with a conversion chart, directly on the rubric. This practice allows the students to know the results from their performance on the multiple intelligence rubric. From the total number of points the student receives for the assignments, a numerical grade can be determined. This will make it easier for teachers to average the results from the intelligence rubric into a final grade.

Concerns that teachers need to accept for developing this type of assessment tool are time, the thematic/topic approach, purposeful action skills, project-centered instruction, and grading. While these concerns may intially seem mysterious and vague, once they become defined, they are more easily approached.

DELIBERATE PRACTICES

Teachers need to make it a deliberate practice to inform students about the multiple intelligences and to provide rubrics to students as examples of ways the criteria can be met for each subject. Finding a way to explain the eight intelligences and rubric assessment to students, without overwhelming them, has to be thought out.

Teachers should think through the process and make it be an exciting practice of sharing this approach with students. The excitement occurs when teachers, after examining the multiple intelligence theory, look for ways to apply it to their own students (L. Campbell 1997; Guild, 1997).

Another deliberate practice is for teachers to begin thinking of the multiple intelligences in multiple modes. The more teachers think in multiple modes, the more the weaving of the intelligences occur, and the more it becomes "second nature" (L.Campell 1997, 15). For a teacher attempting a type of rubric for the first time, limiting the performance tasks (while connecting the intelligences in a multiple mode) can keep frustrations to a minimum. This helps both the students and the teacher.

Successful performance assessment tools have to include defined criteria that has been carefully decided. Each task should be clear to all students. One deliberate practice for developing specific critieria is to use Bloom's taxonomy by beginning each element with a specific verb. Pelletier (1995, 4) emphasizes "we're not getting a way from our content objectives; we're just teaching them in a different way." For example, if teaching Civics, an element for a thematic unit on voting may ask

students to ***complete*** a voter registration and ***write*** three reasons 'why' it is important to vote. This immediately uses two performance verbs to direct students, and they know what performances need to be demonstrated. The combination of the intelligences used in this example is the linguistic (usage of words effectively) and intrapersonal (self-knowledge of the importance of this civic act) as it pertains to each student. The more specific you are with the critieria, the better the results. Being specific energizes students to begin the work.

When developing task criteria for each element, students need to be informed of what, "Excellent, " "Very Good," "Good," "Fair," and "Needs Improvement" examples are within the rubric. This is a deliberate practice for the teacher. Students then have a framework to connect the threads of the various levels within the performance assessment task, and they have the opportunity to increase the results of their performances. Teachers may have difficulty with determining the holistic scoring. This can be assisted by describing what constitutes "Excellent" and then determining what constitutes "Needs Improvement." After completion of the two extremes, it often is easier to develop the inner levels of "Very Good," "Good," or whatever other descriptors are used.

Deliberate practices by teachers help students to excel in their performances and to begin to see what problems they are encountering. The deliberate practices of informing students about the multiple intelligences and rubrics, designing for multiple modes, defining specific criteria, and indicating examples/models of each level of a task enables students to reach for excellence.

THE INSTRUCTIONAL OPTIONS

When teachers weave the multiple intelligences into rubrics, they develop a climate of enthusiasm about the significance of the subject matter and help students recognize why it is important that they learn the content. The instructional options of this type of assessment tool help both students and teachers acquire skills and necessary knowledge. Hudson and Penta (1998, 143) state that the benefits of these types of assessments, when they are well constructed show how:

- Differences among learning styles and the multiple intelligences are more inclusive
- Meaning to learning occurs for students
- Teachers develop further "levels of expertise"
- Student involvement is more pronounced
- Teachers improve both teaching and learning at the same time.

The instructional design should be appropriate, and teachers should not become

bogged down with it. Linda Campbell (1997) reminds teachers that adaptations may be necessary. She further suggests that this may be an opportunity for teachers to seek the suggestions of colleagues. Input from colleagues can help to clarify a point while providing other perspectives. In this way, opportunities for students and teachers are enhanced. The results to instruction and curriculum, by the same author (1997, 7) are discussed:

> Multiple intelligences do not demand an overhaul of a curriculum; it merely provides a framework for enhancing instruction and a language to describe one's efforts. Unlike most educational reforms, it is not prescriptive. Its broad view of human abilities does not dictate how and what to teach. Rather, it gives teachers a complex mental model from which to construct curriculum and improve themselves as educators.

With block scheduling occurring in junior and senior high classrooms, various instructional options can be offered as a creative approach for curricular enrichment opportunities. The extended time frames for block scheduling (from 45 minute class periods to 90 minutes) allow students to employ their intelligences and to share them with classmates.

The instructional options for teachers show how both teaching and learning

becomes more dynamic, student and teacher enthusiasm increases, curricula enrichment deepens and shared knowledge is imparted.

THE CYCLICAL DIMENSIONS

A cyclical dimension is considered a return to the point of origin. The cyclical dimensions of student assessment occur in classrooms as student achievement is recorded. By using the mutiple intelligences in a rubric format, teachers need to be aware that they are simply varying assessment procedures. The cycle of assessment will continue with the other means of assessment (tests, quizzes, and reports); however, teachers are encouraged to explore this dimension of how content is taught as assessment for learning can change by usage of a rubric. Students' perceptions about assessment may be one of the significant dimensions.

When teachers are rubric developers, they need to be aware of several dimensions. Popham (1997, 73) reminds that "teachers need evaluative criteria that capture the essential ingredients of the skill being taught." In other words, teachers need to remember it is the ***skills***, as performed by the students, that they are measuring. Many of the elements within a rubric may be interesting and delightful for the students

to do, but the emphasis should be on why are the students doing it, what skills students acquire from this task, and what purpose it serves for the students. Unless ***skill acquisition*** is part of the curriculum design, and teachers recognize that the required tasks specifically determine the skills to be learned, the instructional quality is weakened. The emphasis for teachers is the fact that each rubric they design needs to be beneficial to students. Do the designated tasks on the rubric promote thought and engage students in the learning process? What skills will be developed, acquired, and mastered, as a result of the performance tasks?

Rubrics are to "enhance instruction" (Popham 1997, 75). Teachers need to see the cycle of instruction, curriculum and assessment. In fact, "good teaching is inseparable from good assessing" (Wiggins, 1992, 32). Teachers may determine after implementing and assessing the rubric, that students were strong in certain areas and needed fine-tuning in other areas. Maybe the rubric needs modifications. These are aspects of the cyclical dimensions that teachers need to know exist. One may have to make certain changes to use the rubric again for a particular project, so students can strengthen their skills. These are the ***cyclical dimensions***. Working on

ways to improve the rubric, its implementation, its standards, its results, are all part of the competence levels deemed necessary for the students as well as the teacher. When a rubric is effective, the students know the educational target, know the established criteria and know how to begin working towards ***meaningful results***. Meaningful results occur when students are able to see the entire fabric, not just the isolated threads. Students are able to determine the pattern of the subject matter, students can connect the isolated threads of knowledge together through their performances, and students recognize the relevance for learning. Thus students themselves are more aware of the cycle dimensions for the processes of instruction, curriculum and assessment.

The importance of what these cyclical dimensions are and how they can help accomplish meaningful results needs to occur. In this way teachers determine the strengths and deficits of each student, teachers determine what the new elements for teaching are within their classroom, and teachers can now use this information for initiating stronger classroom teaching (Hill and Crevola, 1999).

CONCLUSION

Middle and junior high teachers have the abilities and talents to connect the multiple intelligences into assessment procedures by becoming rubric developers of their own curricula. By being aware of the concerns to begin, the practices they deliberately need to employ, the options for instructional enhancement, and the cyclical dimensions of how instruction, curriculum, and assessment are connected, teachers can move students to higher levels of performance while weaving teaching and learning into fascinating patterns of knowlege.

Constructing a Mathematical Mobile

9th Grade Geometry

Name:_____ **Date:**_____

Topic:_____

	Excellent (4)	Very Good (3)	Fair (2)	Needs Improvement (1)
Create a mobile				
Illustrate and label your mathematical concept. (Math and Spatial)				
Show four examples of your mathematical concept in nature. (Naturalistic)				
Write a four line jingle that is relevant to your topic and original. (Musical, Linguistic)				
Write four things you learned with correct spelling and punctuation. (Intrapersonal, Linguistic)				
Use your body movements to illustrate or demonstrate four mathematical concepts. (Kinesthetic)				
Develop and use four questions to ask your peers when presenting mobile to the class. (Interpersonal)				

Comments:

Grading Scale

$22 \leq A \leq 24$

$20 \leq B \leq 21$

$17 \leq C \leq 19$

$15 \leq D \leq 16$

$0 \leq E \leq 14$

Student's Grade:_____

Teacher's Signature:_____

Developed by Lena C. McGinley
Student Teacher at Bloomsburg University

Constructing a Mathematical Mobile

	Excellent	*Very Good*	*Fair*	*N. I.*
Math and Spatial	* four concepts * correct terminology * correct spelling	* three concepts * one incorrect use of terminology * one spelling error	* two concepts * two errors in use of terminology * two spelling errors	* one concept * three or more errors in use of terminology * three or more spelling errors
Naturalistic	* four examples * explained and justified all four	* three examples * explained and justified three examples	* two examples * explained and justified one or two examples	* one example * did not explain or justify
Musical and Linguistic	* four lines * correct spelling * incorporates four concepts	* three lines * one or two spelling errors * incorporates three concepts	* two lines * three or four spelling errors * incorporates two concepts	* one line * more than four spelling errors * not relevant to topic
Intrapersonal and Linguistic	* four things learned * no spelling or punctuation errors.	* three things learned * one or two spelling or punctuation errors	* two things learned * three or four spelling or punctuation errors	* one thing learned * more than four spelling or punctuation errors
Kinesthetic	* four distinct body movements * four different concepts	* three distinct body movements * three different concepts	* two distinct body movements * two different concepts	* one body movement * one concept
Interpersonal	* four questions * all probe students to use higher level thinking skills.	* three questions * at least two probe students to use higher level thinking skills	* two questions * three knowledge based, one higher level	* one question * all knowledge based

Developed by Lena C. McGinley
Student Teacher at Bloomsburg University

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